Status in Sweden and the new diploma for airtightness testers

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Situation in Sweden

Swedish Building Code
- Requirements concerning energy use, no specific requirements concerning airtightness.
- Only for small buildings (less than 100m²) the requirement is specific.
- Testing is mandatory in Sweden.
Situation in Sweden

The developer
• has the responsibility to fulfil these requirements on energy
• is the actor who can formulate the requirement of the future building’s airtightness (better than the assumed airtightness in the energy calculation)
• has contracts with different actors to make sure that these requirements or even more specific and demanding requirements are fulfilled.
• Decide if the building is going to be tested, and in that case - when and how.

Why do we need the diploma for airtightness testers?
• The building industry (developers/designers/contractors) have a increasing awareness about the importance of airtight building envelopes!
• For Swedish Passivehouses there is a demand – on a voluntary basis (0.3 l/m²s at 50Pa pressure difference)
• More consultants offer the service to do the airtightness tests

• Until this year there was no education or diploma which validates the consultants competeces and ability to do a correct airtightness test
• The first diplomas for airtightness testers were sent in January 2014.
• Today there are 20 (soon 25) diplomas in Sweden.
Diploma for airtightness testers

The diploma shows that the consultant has qualifications to
• do a airtightness test according to EN13829 (mostly according to method B).
• be the expert to help the client to reach the requirement using the method Byggal.

Pre-qualifications:
• Experience during 5 years from designing/construction or
• Educational background from 3 years at University (building)
• More than 5 airtightness tests

Tester competence - Training and validation

Education content during 2,5 days:
• Why airtight building envelopes?
• The position/role as a diplomed tester
• The standard EN 13829
• building preparation, calculation areas, calibrations…
• The steps of the test and use of equipment on site
• Identify laeakage on site
• How to write a report
• The building process and priciples and actions for airtightness
• Requirements
• Method – Byggal

Validation/evaluation:
• Theoretical examination
• Practical testing with the own equipment including test report
The diplomed airtightness tester and the buildings process:

- The diplomed airtightness tester also get education to follow a method to ensure airtightness during the building process
- This gives the consultant a possibility to give extra value to the client
- The method - ByggaL

Introduction to the method/guideline

(www.lufttathet.se)

Covers the whole building process

Routines
- Checklists
  - Developer
  - Designer
  - Contractor
  - Operator

Designing for airtightness

Critical details
Measurments
Developer’s requirements for good airtightness

Quantify the requirement
Ex. 1: Air leakage < 0.2 l/m²s
Ex. 2: Air leakage < 0.3 l/m²s
Ex. 3: Air leakage < 0.4 l/m²s

m² area of the building envelope

Verify by measurements
At an early stage in the building process (improvements can still be done to a lower cost)
When the building is completed

Developer’s requirements concerning activities for good airtightness

During the design stage the designer shall
• Appoint someone to be responsible
• Perform information/training of designers
• Ensure durable solutions
• Ensure that solutions can be constructed
• Specify and describe details - documentation

During the construction stage the contractor shall
• Appoint someone to be responsible
• Plan the work, together with the designers
• Information/training in the building site.
• Make inspections
• Measure airtightness performance and trace leakage at an early stage
• Measure airtightness when the building is completed

Documentation
**Airtightness requirements and the developer’s own work**

**Designing for airtightness**

**Detailed drawings and descriptions**

**Critical details**

**Documentation**

**Operation for sustainable airtightness**

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**Designer’s work during design stage - routines**

- Appoint someone to be responsible
- Go through and agree on the requirements
- Internal information / training - material is available.
- Design and documentation
- Internal reviews
- Go through and check the completed documents with contractors
- Identify critical production stages together with contractor - checklist
- Record all information and results
- Hand over results and documentation to contractor
To be considered during design stage - examples

- The airtightness of the materials
- Durability of solutions
- Minimise the number of joints
- Minimise the number of penetrations
- Plan details of airtight penetrations, such as ventilation ducts, chimneys, electrical installations etc
- Plan window and door connections
- Plan connections to walls / floors / ceilings

Airtightness requirements and the developer's own work

Designing for airtightness

Critical details measurements

Operation for sustainable airtightness
Contractor’s work during construction stage - routines

- Appoint someone to be responsible
- Go through documents with the designers concentrating on critical details and work
- Prepare and follow an inspection plan
  - Internal information, should include subcontractors – education material is available
  - Work planning (working methods, materials and critical solutions before each new workmoment)
  - Measurements of airtightness at an early stage – work description is available. Measurements and detection of leaks should allow involved on the buildingsite to take part – improves the knowledge about airtight solutions
- Do final airtightness tests
- Documentation
- Feed back of experience to the designers

Future actions in Sweden

- There is a need to define some recommendations and guidelines in connection to EN13829 in the swedish context (areas in multi-family building for example)

- Experience-meetings for diplomed airtightness testers is planned once a year to support knowledge exchange and communication of new information. Starting in 2015.
Thank you for your attention!

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